10.2 Inflammation and repair

Name: _____ Class: _____ Date: _____ **Total: 24 marks**

KEY WORDS granuloma • granulation tissue

Objective

Date a wound by its cells; split the granuloma fork.

1 Key knowledge and worked examples

■ Cells and clocks

Acute: neutrophils, exudate, cardinal signs. Chronic: mononuclear with scarring ✓. Healing: clot (hours) → inflammation (days 1–3) → granulation tissue (days 3–7) → remodelling (months).

■ Worked example: the strength schedule

~10 % at 1 week, ~50 % at 1 month, ~80 % at 3 months – never 100 % ✓. Granulomas: caseous → TB; non-caseous → sarcoid.

2 Practice

2.1 Which cell type defines acute inflammation? [3]

2.2 Wound strength at one month? [3]

2.3 Granulation tissue vs granuloma – one distinguishing line. [3]

3 Exam-style questions

3.1 A fictional biopsy at day 5 of an open wound.

Identify the expected population (neutrophils receding, macrophages dominant, early fibroblasts and new vessels – granulation tissue appearing on schedule at days 3–7) ✓. Explain why the wound is still weak (~10–20 % strength; type III collagen only) and when it reaches ~50 % and ~80 % ✓. [8]

3.2 A fictional lung biopsy shows nodules of aggregated macrophages.

State what the aggregation is called (granuloma). Give the fork: central caseous necrosis → think mycobacteria (TB); no necrosis, no organism → sarcoid pattern ✓. Explain why the presence of necrosis changes the investigation. [7]

Solutions

2.1

- The neutrophil; chronic inflammation is defined by its absence ✓.

2.2

- ~50 % ✓.

2.3

- Granulation tissue = repair (vessels + collagen); granuloma = aggregated macrophages walling off a persistent stimulus ✓.

3.1

- Day 5: macrophages dominant, neutrophils receding ✓.
- Fibroblasts and new vessels – granulation tissue, on schedule (days 3–7) ✓.
- Weak because type III collagen only; ~10–20 % at this stage ✓.
- ~50 % at 1 month; ~80 % at 3 months as type I replaces III ✓.

3.2

- A granuloma – aggregated macrophages (with lymphocytes) ✓.
- Caseous centre → mycobacteria (TB) pattern; non-caseous → sarcoid pattern ✓.
- Necrosis implies organisms digesting tissue – stain and culture for TB before treating as sterile sarcoid ✓.

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